WHAT IS CLAIMED IS:

1. A method for assembling a seal assembly for a gas turbine engine rotor assembly, said method comprising:

coupling a disk retainer to a first stage disk; and

coupling an interstage seal assembly including an outer shell within the rotor assembly such that a downstream arm extending from the outer shell engages a second stage disk while an upstream arm extending from the outer shell engages the disk retainer.

2. A method in accordance with Claim 1 wherein coupling an interstage seal assembly including an outer shell within the rotor assembly further comprises coupling the interstage seal assembly between the first and second stage disks such that the interstage seal assembly is in compression.

3. A method in accordance with Claim 1 wherein coupling an interstage seal assembly including an outer shell within the rotor assembly further comprises:

coupling the interstage seal assembly upstream arm to the disk retainer with an interference fit; and

coupling the interstage seal assembly downstream arm to the second stage disk with an interference fit.

4. A method in accordance with Claim 1 wherein coupling an interstage seal assembly including an outer shell within the rotor assembly further comprises:

coupling the disk retainer to the first stage disk with an interference fit; and

coupling the interstage seal assembly upstream arm to the disk retainer with an interference fit, such that the disk retainer is between the first stage disk and the interstage seal assembly.

5. A method in accordance with Claim 1 wherein coupling an interstage seal assembly including an outer shell within the rotor assembly further comprises coupling the interstage seal assembly upstream arm to the disk retainer such that the interstage seal assembly facilitates orienting the disk retainer with respect to the seal assembly.

6. A seal assembly for a gas turbine engine including a first stage disk and a second stage disk, said seal assembly comprising:

a disk retainer; and

an interstage seal assembly extending between the first and second stage disks, said interstage seal assembly comprising a radially outer shell extending radially outward from a web portion, said outer shell comprising an upstream arm and a downstream arm extending outwardly from said outer shell, said disk retainer between said outer shell upstream arm and the first stage disk, said downstream arm coupled to said second stage disk.

7. A seal assembly in accordance with Claim 6 wherein said disk retainer is secured in position by axial loading induced from said interstage seal assembly.

8. A seal assembly in accordance with Claim 6 wherein said upstream and downstream arms each extend arcuately in a cantenary contour from said outer shell.

9. A seal assembly in accordance with Claim 8 wherein said outer shell is in compression when said seal assembly is coupled between the first and second stage disks.

10. A seal assembly in accordance with Claim 6 wherein said upstream arm is coupled to said disk retainer with an interference fit, said downstream arm is coupled to the second stage disk with a interference fit.

11. A seal assembly in accordance with Claim 6 wherein said seal assembly facilitates extending a useful life of turbine.

12. A seal assembly in accordance with Claim 6 wherein said interstage seal facilitates aligning said disk retainer with respect to the first stage disk.

13. A gas turbine engine comprising a rotor assembly comprising a first stage disk, a second stage disk, and a seal assembly extending therebetween, said seal assembly comprising a disk retainer and an interstage seal assembly, said interstage seal assembly comprising a radially outer shell and a web portion, said outer shell extending radially outward from said web portion and comprising an upstream arm and a downstream arm, said disk retainer coupled between said outer shell upstream arm and said first stage disk, said downstream arm coupled to said second stage disk.

14. A gas turbine engine in accordance with Claim 13 wherein said seal assembly disk retainer is coupled between said first stage disk and said interstage seal.

15. A gas turbine engine in accordance with Claim 14 wherein said seal assembly disk retainer is secured in position by axial loading induced from said interstage seal.

16. A gas turbine engine in accordance with Claim 14 wherein at least one of said interstage seal assembly upstream and downstream arms extends arcuately in a cantenary contour from said outer shell.

17. A gas turbine engine in accordance with Claim 14 wherein said interstage seal assembly upstream arm is coupled to said disk retainer by an interference fit, said downstream arm is coupled to said second stage disk by an interference fit.

18. A gas turbine engine in accordance with Claim 14 wherein said interstage seal is in compression when coupled between said first and second stage disks.

19. A gas turbine engine in accordance with Claim 14 wherein said interstage seal facilitates extending a useful life of said gas turbine engine.

20. A gas turbine engine in accordance with Claim 14 wherein said interstage seal facilitates orienting said disk retainer with respect to said seal assembly.